

**AMPEX**

*By Special Request*



AMPEX PRESENTS THE AG-440C  
PROFESSIONAL AUDIO RECORDER/REPRODUCER



## ANOTHER STEP FORWARD IN A TRADITION OF EXCELLENCE

For a number of years, Ampex AG-440 and AG-440B recorders have enjoyed an enviable reputation in professional recording and broadcasting circles. The basic design of the machine has been proven under all conditions, and it has logged a remarkable record of reliability. In short, the Ampex AG-440 has long been the standard by which other recorders have been measured.

Now, with the AG-440C, Ampex offers a recorder/reproducer in the same tradition of excellence. Enhancing its potential return on investment are many refinements suggested both by discriminating users throughout the world, and by Ampex design engineers. These refinements provide the user with improved performance and better maintainability. New convenience features insure that the AG-440C is even more efficient and satisfying to use.

This is the working professional's workhorse recorder. Its genealogy is first-rate, and its promise is unsurpassed.

### THE TRANSPORT

**Motion sensing** has been added to transport controls, making it possible to move immediately from Fast Forward or Rewind to Play without first pressing the Stop button. This eliminates the hazards — such as breaking or spilling tape — of changing from one mode to another too suddenly.

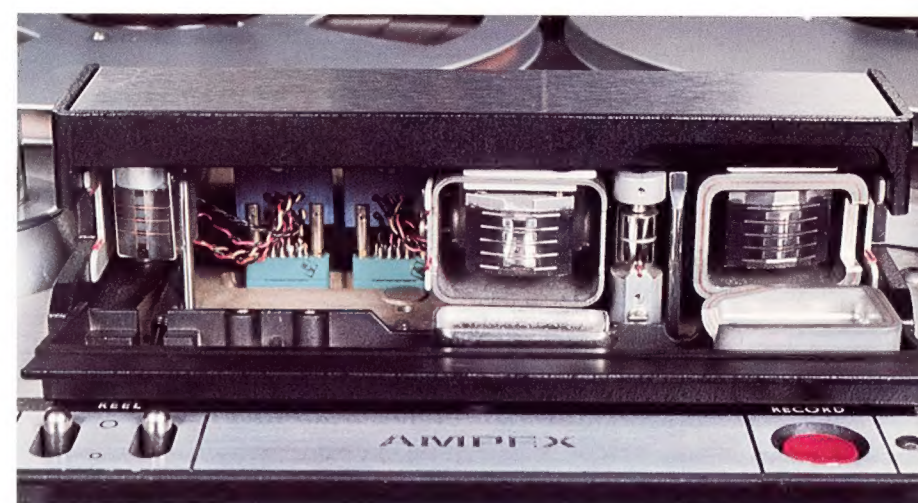
**An improved edit control** makes it possible to release the brakes without the necessity of holding up the tension arm. When tape is spilled, the take-up reel remains stationary, so that the free end of tape on the take-up reel remains in position for splicing.

**An improved tape guidance system** featuring sapphire guides and a flutter idler means more accurate tape handling, further reduction of skew to an all-time minimum, and longer life for individual elements. Reduced skew translates into greater phase shift stability as well as high frequency amplitude stability.

**Tape safety** is assured when the machine is in standby mode by preventing contact of the tape with the capstan until the machine is actually put into Play or Record.



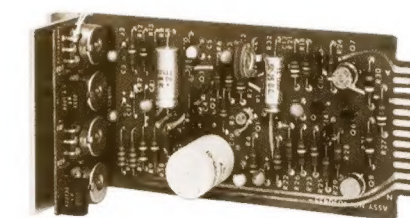
**All advantages** of the transport for which previous AG-440 models are famous have been retained in the AG-440C. **The rugged top plate** is die cast and precision milled, providing a rigid mounting which will remain flat and preserve accuracy under all operating conditions in any configuration, whether mobile or fixed. **The automatic tape lifters** may be overridden manually, electrically or by remote control for cueing



or editing. **Tape guides** may be easily rotated to accommodate either 1/4" or 1/2" tape.

### ELECTRONICS

**The high-frequency response** has been extended with improved flatness — typically +1 -2dB to 15 kHz at 7 1/2 in/s, ±2dB to 20 kHz at 15 in/s when using Ampex 406 tape.



**Sel-Sync response** has been improved at 15 in/s, typically ±2dB, 30Hz-12 kHz. Sel-Sync signal-to-noise ratio is now equal to the reproduce signal-to-noise ratio.

**Automatic switching** has been incorporated in the Sel-Sync mode — when a channel being reproduced with the Sel-Sync synchronizer is put into Record, the output switches automatically from monitoring the Sel-Sync output to monitoring input.

**A plug-in etched board** has been provided for record control circuitry.

**Two line output impedances** are available, 600 ohm or 150 ohms, selectable by a switch.

**Meter sensitivity** for either +4 or +8 line is selectable by a switch.

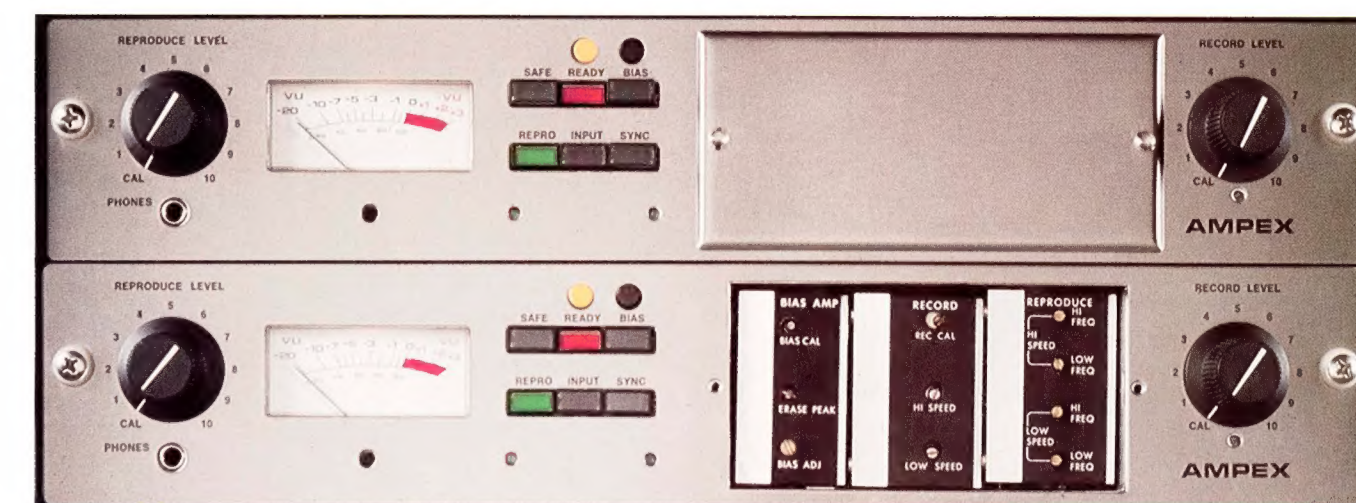
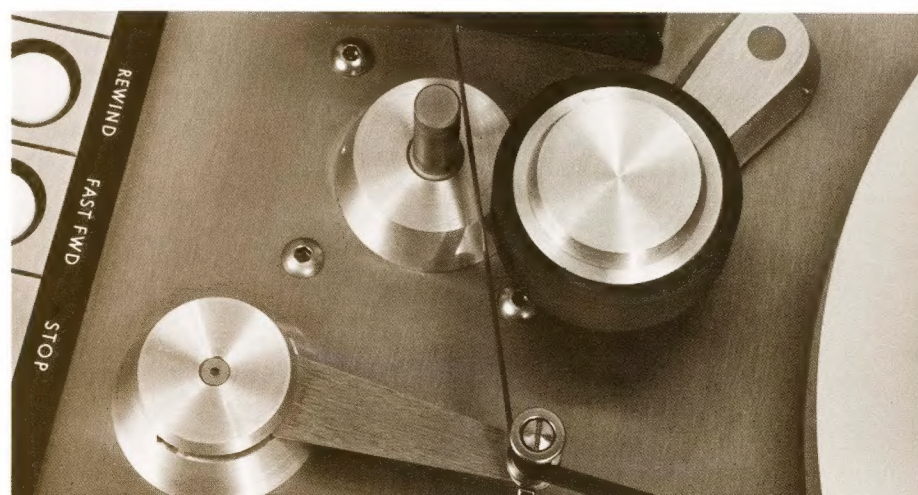
**Bias** may be metered on the VU meter while output is monitoring reproduce or input.

**Gold plated contacts** on electronics modules add to long-term reliability.

### HEAD ASSEMBLIES

**Head assemblies** are easily replaced. Head stacks mount with a single screw and plug-in connector to permit individual replacement, or configuration changes. The gate opens fully to allow access to the heads for editing, cleaning, demagnetizing.

**Space for a fourth head** is provided to permit installation of a four-track stereo head, single track head, or any other head that may be needed for a special purpose.



### MANUAL CONTROLS

**All manual controls** on the AG-440C, as in previous models, are logically arranged for the utmost ease of operation. New improvements make them easier than ever to use.

**"Indicator" pushbuttons** have been introduced for improved display and easier selection of electronics operating functions.

**Calibrate positions** have been incorporated on reproduce and record level controls — a feature which greatly simplifies adjustment and maintenance.

### ADDITIONAL ADVANTAGES

**Other improvements** of the AG-440C reflect the usual meticulous attention to detail represented by Ampex design. **Record and ready lamps** may be easily

pulled out and replaced from the front. **Knurled coin slot screws** are used to hold panel covers in place. **VU meters** are mounted flush, to minimize breakage hazards. Meter lamps are bayonet-type for easy replacement. **The stainless steel electronics front panel** is easily removed for cleaning.

### OPTIONS AND ACCESSORIES

**Capstan control options** for the AG-440C include either a hysteresis synchronous motor, or a dc motor with servo control.

**The hysteresis synchronous motor** provides a highly accurate speed which is more than adequate for many professional recording applications. Facilities are provided for external drive of the motor from a power MDA to permit variable speed operation.

**The capstan servo** provides unique advantages for applications in which timing accuracy is of the highest critical importance, or in which it is necessary to synchronize the AG-440C with film or video equipment, or with another audio recorder. The servo features four standard speeds (3 3/4, 7 1/2, 15 and 30 in/s). It will accept an external reference signal for variable speed control.

**A sync lock** accessory is available for servo-equipped machines. It provides constant sync with video equipment. The sync lock may be used with any channel of electronics. The self-contained variable speed control makes it a simple matter to achieve lip sync.

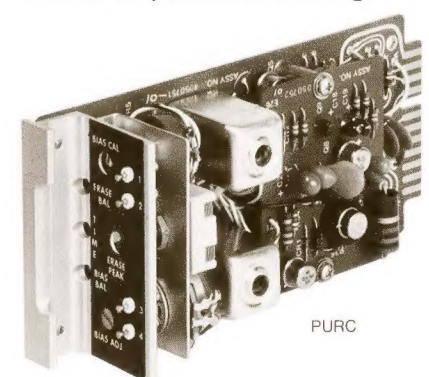
**Transport remote control** is available to permit operation of all functions from one or more locations.

**Extender boards** permit servicing or testing electronics boards while in operation.

**A portable 15-watt amplifier/speaker system** is available (AA-620).

**A microphone/line mixer** is available for rack mounting, or with meter panel and portable

case. The mixer is a 6-position, 2-channel professional model (AM-10) for two channel stereo and monophonic recording.



**Pick-up recording capability** (PURC) permits the overdubbing of an insert into previously recorded material without the tell-tale "hole" at the end of the dub, caused by the distance between the erase and recording heads.



# By Special Request

## Improved manual controls

- "Indicator" push-button electronic controls
- Calibrated record/reproduce controls

## Improved tape guidance

- Sapphire guides
- Improved tape tracking

## Improved Sel-Sync\*

- Improved response at 15 in/s
- Improved signal-to-noise ratio, equal to reproduce
- Automatic monitor switching from Sel-Sync Synchronizer to Input

## Improved edit mode

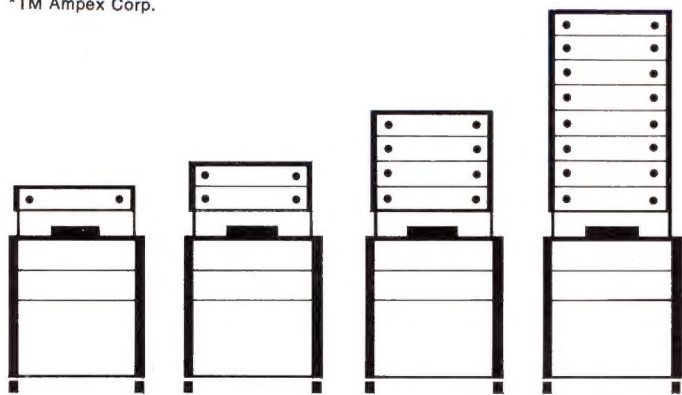
- Simplified control
- Take-up reel remains stationary when tape is spilled

## Improved serviceability

- Plug-in etched boards for record control and transport logic circuitry

Plus a number of miscellaneous improvements, all incorporated into the finest audio recorder/reproducer ever produced.

\*TM Ampex Corp.



## MODELS

The **AG-440C** is available in full-track, 1/2-track, 2-track and 4-track configurations for 1/4-inch tape, and a 4-track configuration for 1/2-inch tape. Options include portable or console models, or unmounted machines for rack installation.

The **AG-440C-8** is an 8-track servo-only version which shares the basic advantages of the smaller machines, but offers greater production versatility. The machine is especially noteworthy for the ease and accuracy with which it handles 10 1/2-inch reels of 1-inch tape.





## SPECIFICATIONS

### TAPE WIDTH AND CHANNELS:

¼" (6.3mm) full track, half track,  
2 channel  
(.075" or 1.9mm track width) and  
4 channel (.040" or 1mm track width)  
½" (12.6mm) 4 channels (.070" or  
1.8mm track width)

### TAPE SPEEDS:

3¾ and 7½ in/s (9.5 and 19 cm/s)  
7½ and 15 in/s (19 and 38 cm/s)  
15 and 30 in/s (38 and 76 cm/s)

### REEL SIZE:

5-inch, 7-inch, 10½-inch, EIA or NAB.

Can accept 29 cm or 11½-inch IEC  
(CCIR) reel with adapters. (Turntable reel  
switches provide correct tension for  
large or small reel hubs.)

### LINE INPUT:

100,000 ohms unbalanced; convertible  
to 20,000 ohms balanced, with supplied  
bridging transformer. Accepts line levels  
from -17 dBm, to produce recom-  
mended operating level.

Record amplifier mid-frequency clip  
level 28 dB or more above operating level.

### LINE OUTPUT:

Balanced or unbalanced.

Nominal impedance: 600 ohm or 150  
ohms selected by switch.

Internal impedance: 130 ohms or 33 ohm  
respectively.

Clip level: +28 dBm or 10 VRMS  
respectively.

Output level: Meter sensitivity is select-  
able by switch for +4 dBm or +8 dBm.

### EQUALIZATION:

NAB Standard for 3¾, 7½ and 15 in/s,  
AES standard for 30 in/s. Equalization  
automatically switched by transport  
speed selector. IEC (CCIR) available for  
3¾, 7½ and 15 in/s.

### OVERALL FREQUENCY RESPONSE:

Specification referred to a 700 Hz zero  
reference when recording with Ampex 406  
tape or equivalent high output low noise  
tape. Zero reference is operating level for  
15 in/s and 30 in/s, at least 14 dB below  
operating level for 3¾ in/s and 7½ in/s.

3¾ in/s NAB +1 -2dB  
30 Hz to 7500 Hz

7½ in/s NAB ±1dB  
50 Hz to 10,000 Hz  
+1, -2dB

30 H to 15,000 Hz  
15 in/s NAB ±1dB

100 Hz to 15,000 Hz  
±2dB

30 Hz to 20,000 Hz  
30 in/s AES ±2dB

50 Hz to 20,000 Hz

### SIGNAL-TO-NOISE RATIO

Measured with respect to a record level of 520 nWb/m to biased tape noise when  
using Ampex 406 or equivalent high output low noise tape.

#### UNWEIGHTED

(Using a 30 Hz to 18 kHz RC filter to attenuate noise outside the audio spectrum)

TAPE SPEED	FULL TRACK	HALF TRACK or 2-TRACK	4 TRACK ½-INCH	4 TRACK ¼-INCH
3¾ in/s NAB	67 dB	62 dB	—	59 dB
7½ in/s NAB	69 dB	64 dB	64 dB	61 dB
15 in/s NAB	68 dB	63 dB	63 dB	60 dB
30 in/s AES	70 dB	65 dB	65 dB	—

#### WEIGHTED

(Using an NAB or ASA "A" weighting filter and a 1000 Hz reference)

TAPE SPEED	FULL TRACK	HALF TRACK or 2-TRACK	4 TRACK ½-INCH	4 TRACK ¼-INCH
3¾ in/s NAB	71 dB	66 dB	—	63 dB
7½ in/s NAB	73 dB	68 dB	68 dB	65 dB
15 in/s NAB	71 dB	66 dB	66 dB	63 dB
30 in/s AES	74 dB	69 dB	69 dB	—

### SEL-SYNC\* RESPONSE:

Specification referred to a 700 Hz zero  
reference in the Sel-Sync mode of oper-  
ation where the record head is used for  
reproducing. The specification does not  
apply to full track recorders.

15 in/s NAB ±2.5dB

30 to 12,000 Hz

30 in/s AES ±2.5dB

50 to 12,000 Hz

### BIAS AND ERASE FREQUENCY

150 kHz

### ERASE EFFICIENCY

75 dB or greater at 1 kHz

### EVEN-ORDER DISTORTION:

Second harmonic distortion of a 500 Hz  
signal recorded at 520 nWb/m (6 dB  
above high output tape operating level)  
is less than 0.4%.

### SPEED ACCURACY:

Speed measured per NAB Standard on  
Magnetic Tape Recording and Repro-  
duction 1965 Section 2.02.01 with the  
pulley located between the capstan  
and the reel idler.

Absolute Speed: (measured in the begin-  
ning portion of a reel using a tape whose  
thickness is .0019" ± .0005").

Servo Motor: Nominal ±0.08%

7½-15 AC Motor: Nominal ±0.20%

3¾-7½ AC Motor: Nominal ±0.20%

\*TM Ampex Corp.

### FLUTTER AND WOW:

Measured per ANSI S 4.3 or DIN 45507 using a pre-recorded flutter tape.

TAPE SPEED	SERVO MOTOR		7½-15 AC Motor		3¾-7½ AC Motor	
	Peak Weighted	Peak Unweighted	Peak Weighted	Peak Unweighted	Peak Weighted	Peak Unweighted
3¾ in/s	0.10%	0.18%	—	—	0.12%	0.22%
7½ in/s	0.06%	0.12%	0.10%	0.14%	0.10%	0.16%
15 in/s	0.06%	0.10%	0.07%	0.12%	—	—
30 in/s	0.04%	0.08%	—	—	—	—

Speed Variation beginning to end of reel:  
(using 10½" NAB or 7" EIA)

Servo Motor: Less than 0.08%

7½-15 AC Motor: Less than 0.10%

3¾-7½ AC Motor: Less than 0.14%

### START TIME:

At 3¾, 7½ and 15 in/s the average  
speed is typically\* within ±½ % of the  
nominal speed in 300 milliseconds  
throughout a reel of tape. This specifi-  
cation does not apply to 3¾-7½  
recorders if the supply tape pack is less  
than 1 inch from the reel hub. At 30 in/s  
±½ % of nominal speed is reached in  
3 seconds.

With capstan servo motors the flutter  
components below 20 Hz will be less  
than ±.3% peak in one second. At  
30 in/s, in 3 seconds. With AC capstan  
motors the flutter components below  
20 Hz will be less than ±.3% peak in  
3½ seconds.

\*Varies with tape. Specification applies  
to Ampex 631 tape.

### STOP TIME:

At 15 in/s the tape moves less than  
3 inches after pressing the stop button.

### REWIND TIME:

Approximately 1 minute for a 2400 foot  
NAB reel.

### POWER REQUIREMENT:

105 to 125V AC 60 Hz

System	Amps (approximate)
1 Channel	2.3
2 Channel	2.5
3 Channel	2.7
4 Channel	2.9

Recorders with capstan servo motors  
operate at either 60 Hz or 50 Hz.

Recorders with AC capstan motors are  
available for 50 Hz operation.

Specifications subject to change without notice.

# AMPEX

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